

and from the *Polonian* disease one may believe them such, yet I think we have not the least encouragement to either from the *Microscope*, much less positively to assert them such. And perhaps the very essence of the *Plica Polonica* may be the hairs growing hollow, and of an unnatural constitution.

And as for the *Analogie*, though I am apt enough to think that the hairs of several Animals may be perforated somewhat like a Cane, or at least have a kind of pith in them, first, because they seem as 'twere a kind of Vegetable growing on an Animal, which growing, they say, remains a long while after the Animal is dead, and therefore should like other Vegetables have a pith; and secondly, because Horns and Feathers, and Porcupine's Quills, and Cats Bristles, and the long hairs of Horses, which come very neer the nature of a mans hair, seem all of them to have a kind of pith, and some of them to be porous, yet I think it not (in these cases, where we have such helps for the sense as the *Microscope* affords) safe concluding or building on more then we sensibly know, since we may, with examining, find that Nature does in the make of the same kind of substance, often vary her method in framing of it: Instances enough to confirm this we may find in the Horns of several creatures: as what a vast difference is there between the Horns of an Oxe, and those of some sorts of Staggs as to their shape? and even in the hairs of several creatures, we find a vast difference; as the hair of a man's head seems, as I said before, long, *Cylindrical* and sometime a little *Prismatical*, solid or impervious, and very small; the hair of an *Indian Deer* (a part of the middle of which is described in the third Figure of the fifth *Scheme*, marked with F) is bigger in compass through all the middle of it, then the Bristle of an Hogg, but the end of it is smaller then the hair of any kind of Animal (as may be seen by the Figure G) the whole belly of it, which is about two or three Inches long, looks to the eye like a thread of coarse Canvas, that has been newly unwreath'd, it being all wav'd or bended to and fro, much after that manner, but through the *Microscope*, it appears all perforated from side to side, and Spongie, like a small kind of spongy Coral, which is often found upon the *English* shores; but though I cut it transversely, I could not perceive that it had any pores that ran the long-way of the hair: the long hairs of Horses C C and D, seem *Cylindrical* and somewhat pithy; the Bristles of a Cat B, are conical and pithy: the Quills of Porcupines and Hedghoggs, being cut transversely, have a whitish pith, in the manner of a Starr, or Spur-rowel: Piggs-hair (A) is somewhat *triagonal*, and seems to have neither pith nor pore: And other kinds of hair have quite a differing structure and form. And therefore I think it no way agreeable to a true natural Historian, to pretend to be so sharp-sighted, as to see what a pre-conceiv'd *Hypothesis* tells them should be there, where another man, though perhaps as seeing, but not forestall'd, can discover no such matter.

But to proceed; I observ'd several kind of hairs that had been Dyed, and found them to be a kind of horny *Cylinder*, being of much about the transparency of a pretty cleer piece of Oxe horn; these appear'd quite

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throughout ting'd with the colours they exhibited. those hairs being boyl'd or steep'd in those very hot tinctures. Dye-fat, And the substance of the hair being much like the Horn, the penetrant liquor does so far mollifie and soften it, that it sinks into the very center of it, and so the tincture mix'd and united with the very body of the hair, and does not (as I thought) only stick on upon the outward surface. And the Horn will make more probable; for we shall find by the experiment, that water will insinuate it self to a pretty depth within it, especially if this penetrancy of the water be much helped by the heat of hot liquors, I guess the reason to be two-fold: First, because the small cylinders of Silk, are abundantly smaller, and have a much less depth to be penetrated then most kinds of Hair; next, because the substance or matter of Silk, is much softer then the substance of Hair is. And that I have reason to think, First, because when it is spun or drawn out of the Worm, it is in a glutinous substance, and very easily sticks and cleaves to the body, as I have several times observed, both in Silk-worms and in the cocoons. Next, because that I find that water does easily dissolve the substance again, which is evident from their manner of making the bottoms or pods of the Silk-worm before they are able to spin. It is no great wonder therefore, if those Dyes or ting'd liquors, do so easily mollifie and tinge the surfaces of so small and so soft. And we need not wonder that the colours appear so much more bright and so dull in the other, if we view but the ting'd hairs with a good *Microscope*; for whereas the substance of Hair is but a dirty dusky white somewhat transparent, the filaments of Silk are a most lovely transparency and cleanness, the difference between the two being not much less then that between a piece of clear Crystal; the one yielding a bright and vivid reflection from the concave side of the cylinder, that is, from the concave side of the cylinder; the other a dull and perturb'd reflection from the several *Heterogeneous* parts of it. And this difference will be manifest enough to the eye, if we take a couple of small Cylinders, the smaller of Crystal Glasse, and then varnishing them over very thinly with some tincture, which will represent to the naked eye much the same kind of reflection as is represented to it from the filaments of Silk and Hair by the *Microscope*. Now, since the threads of Silk and Serge consist of a great number of these filaments, we may henceforth easily perceive the difference. From much the same reason proceeds the difference of colours of Feathers, wherein they very far exceed the Artificial colours of hair, of which I shall say more in the next Chapter.

The Teguments indeed of creatures are all of them made use of to the peculiar use and convenience of that Animal which they